Physics

NUMERICAL SIMULATION OF SYNCHRONOUS CHAOTIC PLASMA DISCHARGES

Rebecca D. Yapp, Epaminondas Rosa, Jr.*

Department of Physics
Illinois State University
Campus Box 4560
Normal, IL 61790-4560
rdyapp@ilstu.edu

The purpose of synchronizing chaotic oscillators is to control their output. The study of the synchronization of chaotic processes in general is applicable to plasmas, lasers, electrochemistry, engineering, and biology.

Here we deal with the synchronization of plasma discharges, using periodic and chaotic signals as drivers. We perform numerical simulations to anticipate how two chaotic plasmas can synchronize with each other. Previous simulations using plasmas (with a sinusoidal function and a Chua circuit) have produced good agreement with experiments.